

Bioconversion of *Scutellaria baicalensis* extract can increase recovery of auditory function in a mouse model of noise-induced hearing loss.

[Rodriguez I](#)¹, [Hong BN](#)², [Nam YH](#)¹, [Kim EY](#)¹, [Park GH](#)³, [Ji MG](#)³, [Kang TH](#)⁴.

<https://www.ncbi.nlm.nih.gov/pubmed/28747011>

Abstract

In noise-induced hearing loss (NIHL), noise exposure damages cochlear sensory hair cells, which lack the capacity to regenerate. Following noise insult, intense metabolic activity occurs, resulting in a cochlear free radical imbalance. Oxidative stress and antioxidant enzyme alterations, including lipoxygenase upregulation, have been linked to chronic inflammation, which contributes to hearing impairment. We previously proposed *Scutellaria baicalensis* (SB) extract as an alternative therapeutic for preventing NIHL and attributed its pharmacological effects to baicalein. Although baicalein was most effective, its concentration in SB extract is much lower compared to baicalin. In this study, we performed enzymatic bioconversion using an Sumizyme (SM) enzyme to increase baicalein concentration in SB extract and consequently improve its therapeutic efficacy. HPLC analysis revealed that baicalein concentration in SB extract after bioconversion (BSB) was significantly increased. Moreover, BSB-treated mice exhibited significantly improved auditory function compared with control mice and tended to have improved auditory function compared with SB-treated mice. We also demonstrated that BSB effectively stimulates hair cell regeneration compared to SB that did not achieve the same effect in a zebrafish model. Finally, when compared the abilities of SB and BSB to inhibit lipoxygenase (LOX), BSB showed a greater efficacy. Cumulatively, our data suggest that BSB exhibits improved pharmacological properties for treating NIHL compared with SB.